

REMARKS/ARGUMENTS

This Application has been carefully reviewed in light of the Office Action mailed February 16, 2006 (the "Office Action"). Claims 1-11, 13, 21, and 23-51 were previously cancelled, claim 20 was previously withdrawn, and claim 12 is currently amended. Claims 12, 14-19, and 22 are pending in the application. Claims 12, 14-19, and 22 are believed to be allowable in light of the amendments and arguments presented below. Reconsideration of the claims is respectfully requested in light of the amendments and arguments presented below.

Provisional Obviousness Type Double Patenting Rejection:

In the Office Action, the Examiner provisionally rejects claims 12, 14-19, and 22 under the judicially created doctrine of obviousness type double patenting as being unpatentable over claims 1-11 of US Patent Publication 2005/0045067 A1 (10/960,150 Naji et al.). In making this rejection, the Examiner states that "[a]lthough the conflicting claims are not identical, they are not patentably distinct from each other because Naji et al. teach a composition comprising cement, plastizer such as melamine sulfonate formaldehyde (page 2 [0033]), cellulose (p.3) and gums [0039] in amounts overlapping the instantly claimed invention."

A double patenting rejection of the obviousness-type is "analogous to [a failure to meet] the nonobviousness requirement of 35 U.S.C. 103" except that the patent principally underlying the double patenting rejection is not considered prior art. In *re Braithwaite*, 379 F.2d 594, 154 USPQ 29 (CCPA 1967). Therefore, any analysis employed in an obviousness-type double patenting rejection parallels the guidelines for analysis of a

35 U.S.C. 103 obviousness determination. *In re Braat*, 937 F.2d 589, 19 USPQ2d 1289 (Fed. Cir. 1991); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985). All limitations of the claimed invention must be considered when determining patentability. *In re Lowry*, 32 F.3d 1579, 1582, 32 U.S.P.Q.2d 1031, 1034 (Fed. Cir. 1994). In comparing *Fukuba*, *Shill*, *Schermann*, and *Dingsøyr* to the claimed invention to determine obviousness, limitations of the presently claimed invention may not be ignored. The present invention in claim 12 recites in relevant part "wherein the quantity of dispersion agent is sufficient to increase the efficacy of the viscosity enhancing agent during extrusion of said cementitious formulation." Such a feature is not found in *Naji*. Therefore, the provisional obviousness type double patenting rejection is improper.

For these reasons, Applicants respectfully requests that the Examiner withdraw the rejections under the judicially created doctrine of obviousness type double patenting.

Section 112 Second Paragraph Rejections:

In the Office Action, the Examiner rejects claims 12, 14-19, and 22 under 35 U.S.C. §112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. This rejection is respectfully traversed.

In making this rejection, the Examiner states that "[t]he term 'density modifier' remains indefinite because other weighted components such as silica and lime can potentially affect or modify density (potentially increase it) but modify can be either a density increase or decrease and this is not specified by this term."

The standard for definiteness is whether a claim reasonably apprises those of skill in the art of its scope. *In re*

Warmerdam, 33 F.3d 1354, 1361, 31 U.S.P.Q.2d 1754, 1759 (Fed. Cir. 1994). Whether the claim leaves unclear the manner in which a "density modifier" may be implemented is irrelevant where the claim clearly covers all forms of implementation. *In re Warmerdam*, 33 F.3d 1354, 1361, 31 U.S.P.Q.2d 1754, 1759 (Fed. Cir. 1994). The claim is not indefinite if one skilled in the art would have no particular difficulty in determining whether a "density modifier" has been implemented. *In re Warmerdam*, 33 F.3d 1354, 1361, 31 U.S.P.Q.2d 1754, 1759 (Fed. Cir. 1994). Thus, the fact that "density modifier" includes components that may raise the density and components that may lower the density does not render "density modifier" indefinite. Claim 12 as written is intended to cover both embodiments.

Therefore, the rejection of claims 12, 14-19, and 22 under 35 U.S.C. § 112, second paragraph has been overcome and for these reasons, Applicants respectfully requests that the Examiner withdraw the rejections under § 112, second paragraph.

Regarding withdrawn claim 20, applicant is willing to amend claim 20 to read "a polymer comprising at least one acrylic monomer" in place of an "acrylic based polymer" should the examiner find claim 12 allowable and rejoin withdrawn claim 20.

Section 103 Rejections

In the Office Action, the Examiner rejects Claims 12, 14-19, and 22 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 4,102,697 to Fukuba, et al.. ("*Fukuba*"), KR 9508587 abstract to Shin et al. ("*Shin*"), U.S. Patent 5,470,383 to Schermann, et al. ("*Schermann*"), or U.S. Patent 4,935,060 to Dingsøyr ("*Dingsøyr*"). This rejection is respectfully traversed.

A prima facie case of obviousness is established when the teachings of the prior art itself suggest the claimed subject matter to a person of ordinary skill in the art. *In re Bell*, 991 F.2d 781, 783, 26 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1993). All limitations of the claimed invention must be considered when determining patentability. *In re Lowry*, 32 F.3d 1579, 1582, 32 U.S.P.Q.2d 1031, 1034 (Fed. Cir. 1994). In comparing *Fukuba*, *Shill*, *Schermann*, and *Dingsøyr* to the claimed invention to determine obviousness, limitations of the presently claimed invention may not be ignored. The present invention in claim 12 recites in relevant part "wherein the quantity of dispersion agent is sufficient to increase the efficacy of the viscosity enhancing agent during extrusion of said cementitious formulation." The phrase "efficacy of the viscosity enhancing agent" is defined in the specification of the present application at page 4, lines 10-16 to be the "addition of the suitable dispersion agent sufficient to provide one of three results:

- i) maintaining extrudability with less viscosity enhancing agent as compared to the conventional dosage without dispersion agent,
- ii) maintaining extrudability with use of lower grade (cheaper) viscosity enhancing agent than is conventionally used, or
- iii) improving extrudability for the same quantity of viscosity enhancing agent as compared to the conventional dosage."

Such a feature is not taught or suggested by *Fukuba*, *Shill*, *Schermann*, or *Dingsøyr*, individually or in combination.

In the Office Action, the Examiner states that "[t]he applicants argue that Fukuba '97 does not suggest an extrudable formulation. The examiner disagrees. Fukuba '697 teaches the same composition containing the same components in overlapping amounts as claimed by applicants for their invention. As a result, any properties such as extrudability would also have to be present in Fukuba '697." (Office Action dated 02/16/2006, pp. 3-4). However, the Examiner is mistaken in suggesting that Fukuba '697 teaches the same composition containing the same components in overlapping amounts since the Examiner has ignored the limitation "wherein the quantity of dispersion agent is sufficient to increase the efficacy of the viscosity enhancing agent during extrusion of said cementitious formulation." It is in part due to the fact that *Fukuba* does not teach or suggest this claim element that results in *Fukuba* teaching formulations with viscosities that are not extrudable. Furthermore, the Examiner's assertion in the Office Action on page 4 that the applicant is improperly arguing a feature (viscosity) not present in their claims is incorrect. Applicant's merely point out the viscosity of the formulations in *Fukuba* to demonstrate that *Fukuba* does not suggest an extrudable cementitious formulation, an element that is recited in claim 12 of the present application.

However, regardless of whether the formulations taught or suggested by *Fukuba* are extrudable, which it clearly is not as explained below, the fact still remains that *Fukuba* does not teach or suggest "the quantity of dispersion agent is sufficient to increase the efficacy of the viscosity enhancing agent during extrusion of said cementitious formulation" because even if the quantity of dispersion agent is within the specified range, it must still be further adjusted or fine tuned within the range to

achieve the stated limitation of having the "quantity of dispersion agent is sufficient to increase the efficacy of the viscosity enhancing agent during extrusion of said cementitious formulation." Similar arguments apply to *Shill*, *Schermann*, and *Dingsøyr*.

Central to the Examiner's opinion in relation to the Section 103 rejections is that the formulations as claimed in the present application are obvious in light of any prior art which may teach overlapping ranges of DA/VEA, irrespective of the field of the prior art and the type of cementitious formulations. However, the applicant asserts that it is simply not obvious to modify any prior art which may teach overlapping ranges. For example, *Schermann et al*, *Dingsøyr et al*, *Burge et al*, *Sobolev et al* and *Sandoz AG* all teach either slurries, mortars, pourable compositions or variants thereof. It **may** be obvious for the skilled person to reduce the water content of these compositions to thicken them. However, a thickened cementitious formulation is not necessarily extrudable. As one skilled in the art would be aware, the viscosity of a formulation is only one characteristic of the formulation; of more importance is the rheology profile of the formulation. Simply having high or relatively high viscosity does not equate to acceptable extrudability. Further still, extrudable formulations are so remote from slurries, mortars or pourable compositions that they usually require specialized processing equipment and specialized knowledge of how to prepare and process such compositions, e.g. specialized mixing and kneading equipment.

Nonetheless, even **assuming** that the skilled person could (note, not would) reduce the water content to thicken the composition, an inventive contribution would be required.

However, as already asserted, it simply does not follow that it is obvious that slurried formulation is even suitable for extrusion. Yet further still, an inventive contribution would be required to discover the surprising relationship between the DA and VEA in an extrudable cementitious formulation. Yet even further still, an additional inventive contribution would be required to discover that this relationship operates within the defined claimed ranges. There are simply too many inventive contributions that are required to the prior art, to result in a formulation as claimed in the present application and therefore, the formulation as claimed in the present application is clearly not obvious in light of the art cited by the Examiner.

The fact that an increase in efficacy of the viscosity enhancing agent may be obtained with appropriate quantities of dispersion agent is entirely surprising and unexpected as indicated on the 5th page of the specification after the cover page at lines 10-11. Furthermore, none of the cited references, whether relied upon by the Examiner in rejecting the claims or not, recognize the problem or need for increasing the efficacy of the viscosity enhancing agent and the addition of a dispersion agent appears to be for other purposes unrelated to extrudability. Therefore, the applicant asserts the present invention is inventive in light of the prior art.

Detailed Arguments

US 4,102,697 (Fukuba et al)

Fukuba is concerned with fluid plaster compositions. According to the document, the plaster composition of the invention shows a low viscosity of about 2000 cps or less.... (col. 2, lines 10-11). As previously indicated, and as one skilled in the art would be abundantly aware, such a low viscosity is simply not extrudable. Furthermore, the many

references in the document to pouring of the composition is totally at odds with extrudable compositions, which are self supporting paste-like formulations and certainly not pourable; pourability is not a characteristic of an extrudable formulation. Further, improved fluidity is diametrically opposed to an increase in the efficacy of [a] VEA . Therefore, this document clearly teaches away from formulation as recited in the claims of the present application.

Further still, plaster compositions and their chemical modification is a field of art which is remote to that of the instant invention. The applicant asserts that the skilled person would simply not be looking to modification of the fluidity of compositions comprising the form of gypsum hemihydrate when looking to improve the efficacy of a VEA in a cementitious formulation, and in particular an extrudable cementitious formulation.

The Examiner asserts that Fukuba teaches the same composition containing the same components in overlapping amounts. With due respect to the Examiner, Example 5 (Table 5) teaches sulfonic DA concentration within that claimed in the present application, viz 0.2% by weight of gypsum hemihydrate. However, the VEA concentration is below that claimed in the present application i.e. 0.05%. Similar comments apply for Example 6 (Table 6) wherein it appears that the Examiner has erred in his analysis; a VEA concentration of 0.05% is outside the claimed VEA range of 0.3-5%. Example 7 (Table 8) teaches DA = 1% and VEA = 0.05%; Example 8 (Table 9) teaches DA = 1.2% and VEA = 0.05%; again these values fall outside the claimed ranges. Whilst a portion of the sulfonated DA concentration range as disclosed in Fukuba et al overlaps with that claimed in the present application, the document does not teach a combination

of DA and VEA having the ranges as claimed in the present application. The applicant notes that claim 17 of Fukuba claims a plaster composition which further comprises a viscosity-regulating agent. No range is claimed. Therefore, without an inventive contribution on behalf of the skilled reader it would have been impossible from this disclosure alone, or even in combination with the Examples, to modify the teachings of Fukuba *et al* to result in the inventive concept as claimed in the present application. Therefore, the applicant respectfully asserts that the present application is inventive in light of the document.

KR 9508587 (Shin *et al*)

The Examiner asserts that Shin *et al* teaches overlapping ranges with the instant application. The applicant respectfully disagrees with this assertion and refers the Examiner to claim 12 of the instant application which claims the DA and VEA concentrations by weight of dry solids of cementitious material. The VEA concentration as taught by Shin *et al* is 0.5-2.5 weight parts of VEA combined with 0.6-5.0 weight parts of DA and 100 weight parts of cement. Therefore, the concentrations of VEA and DA when expressed by weight of dry solids of cementitious material are VEA = 0.5-2.5% and DA = 0.6-5.0%. Whilst the VEA concentration is within that claimed in the instant application (i.e. 0.3-5%), the DA range as taught by Shin *et al* is clearly outside that claimed in the instant application (i.e. 0.05-0.5%). Because both the ranges do not overlap with that claimed in the present application, the applicant asserts that Shin *et al* cannot teach or suggest the instant application.

US 5,047,086 (Kayakawa *et al*)

The Examiner confirms that the present application is both novel and inventive in light of this document, because a DA is not taught nor suggested.

US 5,891,374 (Shah et al)

The Examiner cites Shah et al and admits that it is not clear if overlapping ranges are taught with the instant application. Close inspection of the document reveals that Shah et al does not appear to teach or suggest overlapping ranges. For example we refer the Examiner to Table 4 wherein the High-range-Water-Reducer/Cement concentration for both extruded formulations is above the range claimed for DA in the instant application, and the Binder/Cement concentration ranges are below that claimed for VEA in the instant application. Therefore, the document simply could not suggest the present invention because overlapping ranges are not taught.

JP 06-127992 (Fujito et al)

The document defines a cementitious composition for extrusion and casting comprising a cellulose powder and a high efficient water reducing agent. This is entirely different from the present application. There is no mention whatsoever of a VEA as required by the present application. The use of water-soluble cellulose ether polymers (MC, HMC and CMC) are mentioned as prior art to improve both plasticity and shape retention. However, the document rejects these prior art mechanisms since extrusion through put was reduced due to high stickiness, bad slipping and mould release characteristics. The retarding effect of such watersoluble cellulose ethers was said to be another major reason for rejecting the prior art. The document attempts to overcome these problems by using a DA in combination with a cellulose powder. Clearly this is entirely distinct from the present application. Moreover, the DA range as taught by

Fujito *et al* does not overlap with the range as claimed in the present application. Therefore, the document simply could not suggest the present invention.

US 5,470,383 (Schermann *et al*)

In relation to Schermann *et al*, the document does not teach or suggest extrusion and is directed to the thickening of slurried formulations. Even a simple inspection of the viscosities of the formulations suggests that none of the formulations may be a suitable candidate for extrudability.

US 4,935,060 (Dingsoyr)

Similar comments to Schermann *et al* apply for Dingsoyr.

US 5,453,123 (Burge *et al*)

The document relates to a cement set-accelerating agent comprising a carbonic acid mono- or di-ester and a surfactant or air-entrainer. Other additives such as superplasticisers etc are added as an afterthought to improve the workability and/or properties of the final building material but they are not the thrust of the invention. There is simply no mention of extrusion or extrudability.

US 6,645,289 (Sobolev *et al*)

The document relates to admixtures for cement and concrete for increasing strength and durability. The document does not relate to extrusion or extrudable cementitious formulations. In particular the citation teaches a synergistic effect of sorbent (fine or superfine non-crystalline silicone dioxide) and water reducer. The crux of this invention is the combination of the water reducer and the sorbent. Claim 34 includes the limitation of adding a water-soluble polymer, which may be chosen from the cellulose ethers. This is clearly not essential to the invention. The citation does not disclose or suggest ways to

improve the efficacy of the VEA, and simply does not disclose or suggest the unexpected synergy between a VEA and a DA.

WO 86/00291 (Sandoz AG)

The document does not disclose extrudable cementitious materials as claimed in the present application. It instead relates to grouts, mortars and concretes for cementing bricks, blocks, stucco and ceramic tiles etc. No reference to extrusion or extrudability is discussed or suggested.

§103 Conclusion

Therefore, claim 12 is not obvious in view of *Fukuba*, *Shill*, *Schermann*, and *Dingsøyr*. Since claims 14-19 and 22 depend from claim 12, the same distinctions between *Fukuba*, *Shill*, *Schermann*, and *Dingsøyr* and the claimed invention in claim 12 apply for these claims as well. Consequently, it is respectfully urged that the rejection of claims 14-19 and 22 have been overcome.

Therefore, the rejection of claims 12, 14-19, and 22 under 35 U.S.C. § 103 has been overcome and for these reasons, Applicants respectfully requests that the Examiner withdraw the rejections under § 103.

Withdrawn Claim 20

Applicants request the Examiner rejoin withdrawn claim 20 should claim 12 be found allowable. Claim 20 was withdrawn pursuant to an election of species requirement. Claim 12 is generic.

CONCLUSION

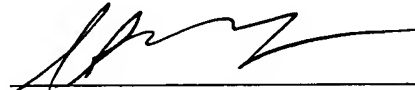
In light of the remarks and arguments presented above, Applicants submits that the pending claims in the Application are in condition for allowance, and requests favorable consideration and allowance of these claims.

No fees are believed to be due at this time. Applicants hereby authorizes the Commissioner to charge any additional fees or refunds that may be required by this paper to Deposit Account 07-0153.

If the Examiner has any questions or comments, or if further clarification is required, it is requested that the Examiner contact the undersigned at the telephone number listed below.

Please direct all correspondence to the practitioner listed below at Customer No. 60148.

Respectfully submitted,



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